

Du'Bois J. Ferguson
Remediation Manager

Schlumberger Oilfield Service
300 Schlumberger Drive
Sugar Land, TX 77478
Tel: 281-285-3692
DFerguson3@slb.com

August 10, 2011

VIA FedEx Overnight

Section Chief
Environmental Enforcement Section
U.S. Department of Justice
PO Box 7611
Washington, DC 20044-7611

Craig Zeller
Remedial Project Manager
Superfund Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: DOJ Case No. 90-11-2-696/1

Subject: July 2011 Monthly Report
Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site
Natural Resources Trustees Consent Decree

Dear Section Chief:

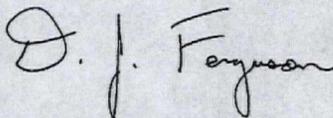
In accordance with the Consent Decree and Section XIV of the Unilateral Administrative Order for the above referenced site, Schlumberger is required to submit Progress Reports on a quarterly basis. Given the current pace of activities, we will be submitting Progress Reports on a monthly basis until further notice in satisfaction of the reporting requirements of the Consent Decree and Unilateral Administrative Order.

In keeping with Paragraph 20 of the Consent Decree:

I certify that the information contained in or accompanying this submission is true, accurate and complete. This certification is based on my personal preparation, review, or analysis of the submission, and/or supervision of persons who, acting on my instructions, made the verification that the submitted information is true, accurate and complete.

If you have any questions, please do not hesitate to contact me at (281) 285-3692.

Sincerely,



DuBois J. Ferguson
Remediation Manager



U. S. E P A R E G I O N I V

SDMS

POOR LEGIBILITY

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cc: Honorable G. Ross Anderson, Jr.
G. Ross Anderson, Jr. Federal Building
and United States Courthouse
315 South McDuffie Street, 2nd Floor
Anderson, SC 29624

Honorable William W. Wilkins
Nexsen Pruet
55 E. Camperdown Way
Suite 400
Greenville SC 29601

Leon C. Harmon Esq.
Nexsen Pruet
55 E. Camperdown Way
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John Cresswell
Assistant Director
Division of Site Assessment and Remediation
Bureau of Land & Waste Management
SC Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Regional Solicitor's Office
U.S. Department of the Interior
Attn: Harriet M. Deal
75 Spring Street, SW Room 304
Atlanta, GA 30303

Diane Beeman
Ecological Services Office
U.S. Fish and Wildlife Service
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

Paul League
SC Department of Natural Resources
Office of Chief Counsel
1000 Assembly Street
Columbia, SC 29202

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Georgia Department of Natural Resources
3695 Highway 197
Clarkeville, GA 30523

Office of the Attorney General
Timothy J. Ritzka
Assistant Attorney General
40 Capitol Square SW
Atlanta, GA 30334

Jamie Sykes
Richard B. Russell Project Office
4144 Russell Dam Drive
Elberton, GA 30635

Frank S. Holleman III
Wyche Burgess Freeman & Parham, P.A.
44 East Camperdown Way
Greenville SC 29601-3591

Mr. Paul Doody
ARCADIS
6723 Towpath Road
Syracuse, NY 13214-0066

Mr. Ronald Cardwell
McNair Law Firm, P.A.
Post Office Box 447
Greenville, SC 29602

Ms. Celeste T. Jones
McNair Law Firm, P.A.
Post Office Box 11390
Columbia, SC 29211

July 2011 Monthly Report
Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site
Operable Unit 2

Activities Initiated/Completed

- Dredges Clare and Kami continued dredging in the Woodside II (WSII) Impoundment until demobilization on July 22, 2011.
- Demobilized long-reach excavator from WSII, and replaced with concrete breaker for demolition of the WSII Dam.
- Initiated dam demolition. Removed all gates/controls from sluice gates 1 and 2 on July 28, 2011.
- Started mechanical excavation of sediment from STA 68 moving upstream.
- Initiated demobilization of water treatment and other site equipment.
- Performed daily water quality monitoring.
- Installed silt curtains, rock check dams, and other engineering controls, including work stoppages to control turbidity.
- Maintained lower water surface elevation in WSII Impoundment.
- Continued inspection of site for SWPPP compliance, and made adjustments as necessary.
- On July 11, 2011, SCDHEC Solid Waste Management Regional personnel were onsite for a general visit/inspection and performed a Class Three Landfill Inspection in accordance with Regulation 61-107.19, Part V. No issues were noted during the inspection. The completed Inspection Form is provided as Attachment 1.

Results of Sampling, Tests, and Other Data

- Sampling and analysis is being conducted relative to the creek turbidity, and water treatment system (WTS) effluent water. Results for the effluent water are attached (Attachment 2).
- During dredging, turbidity samples were collected three times daily upstream and downstream of the dredge activities.
- Project photographs are included as Attachment 3.

Plans, Reports, and other Deliverables

- Analytical data related to samples collected from the WTS to assess water treatment effluent water were submitted to SCDHEC in the June Monthly Report (submitted July 28, 2011) in Attachment 2.
- The Dredge Verification Report (DVR) for STA 55+00 to 60+00 was submitted on July 18, 2011.

Work Planned for August 2011

- Continue dredge verification surveys with submittal to the Special Receivers and their consultant.
- Complete removal of sediment from the WS II impoundment and placement of excavated sediment in SMU.
- Continue monitoring WTS discharge.
- Complete dam demolition.

Issues Encountered, Anticipated Delays, Solutions

- Severe weather including heat and humidity occurred throughout the month, impacting site activities.
- Encountered significant difficulty dredging debris close to bedrock, resulting in equipment clogging.



Attachment 1



**Class Three Landfill Inspection Form
Regulation 61-107.19, Part V**

Facility Name: 12 MOLE RIVER SMY Date/Time of Inspection: 11/30/11
 County: PICKENS Permit #: _____
 Reason for Inspection: Routine; Follow-up: _____; Complaint: _____; Other: MONTHLY
 Current Weather Conditions: Partly Sky 90°

Previous 24-hours: Rain Y If yes, amount _____ inches; High winds Y

1 - Meets or exceeds regulatory requirements; 2A - Improvement needed (minor issues exist; corrective measures recommended); 2B - Improvement needed (moderate issues exist; corrective action required and scheduled); 3 - Unacceptable (serious issues and/or recurring issues with minimal or no corrective action taken - alleged regulatory or permit condition violations have occurred - enforcement referral required); Y - Yes: Meets or exceeds regulatory requirements; N - No: Corrective measures recommended that should be fixed by the next inspection or an agreed upon completion date; NA - Not applicable; NI - Not inspected

Procedures for Excluding Receipt of Unapproved Waste (258.20)

1. NA Overall effectiveness of Special Waste Analysis and Implementation Plan (SWAIP)
2. Y N NA NI Trained waste screener present
3. Y N NA NI Random daily load inspections conducted and documented
4. Y N NA NI Records of unacceptable waste maintained
5. Y N NA NI Personnel training program on recognition of regulated hazardous waste and PCB waste
6. Y N NA NI Record of Notification to Department within 72-hours of hazardous or PCB waste receipt
7. Y N NA NI Unauthorized wastes removed from working face by the end of the operating day

Cover Material Requirements (258.21)

8. NA $\geq 6"$ soil (short-term cover)
9. NA Alternate Daily Cover (ADC)
10. NA $\geq 6"$ soil (long-term and/or intermediate cover)
11. Y N NA NI Adequate soil quantity available for cover

Control of (258.21, 22, 24, 25 and 37):

12. 1 Blowing litter
13. 1 Off-site odors
14. 1 Disease vectors
15. 1 Fires/Open burning
16. 1 Scavenging

Access Requirements (258.25)

17. 1 Condition of access controls
18. 1 Condition of all weather roads - entrance
19. 1 Condition of all weather - internal haul roads

Run-on/Run-off Controls (258.26)

20. 1 Condition of ditches/swales
21. 1 Condition of berms/terraces/downchutes
22. 1 Condition of sedimentation ponds

Leachate Seeps (258.26 and 27)

23. NA Leachate seep management

Liquid Restrictions (258.28)

24. NA Free of unauthorized bulk or non-containerized liquids

Record Keeping Requirements (258.29)

25. Y N NA NI Required records are maintained in the landfill's operating record

Scale Requirements (258.30)

26. Y N NA NI Scales installed and functioning properly

Required Equipment to Operate Landfill (258.31)

27. Y N NA NI Required equipment operational - if not please provide details in comments as to the type of equipment down for repairs, impact to operations, and status on temporary replacement equipment

ALL UP

Certified Landfill Manager/Supervisor (258.32)

28. Y N NA NI Manager and supervisor certified by SCDHEC
29. Y N NA NI Certified manager or supervisor on-site

Leachate Collection System (258.33 and 34)

30. Y N NA NI Leachate handling agreement in place
31. NA Leachate collection system management
32. NA Leachate recirculation system management
33. Y N NA NI Required leachate recirculation reports/data contained in the landfill's operating record
34. NA Leachate seep management
35. NA Leachate collection system management

Testing of Municipal Solid Waste (MSW) Incinerator Ash (258.35)

36. Y N NA NI MSW incinerator ash management

Sign Requirements (258.36)

37. Y N NA NI Required signs posted

Condition of Monitoring Wells (258.51)

38. 1 Monitoring well maintenance program

Working Face Elevation (258.87)

39. Y N NA NI Method of elevation control with benchmark

Plans and Permit (Permit)

40. Y N NA NI Operating in accordance with approved plans and general permit
41. Y N NA NI Permitted engineering drawings available
42. Y N NA NI Permitted operational plan available
43. Y N NA NI Permitted stabilization/landscaping plan available
44. Y N NA NI Permitted contingency plan available
45. Y N NA NI Permitted approved groundwater-monitoring plan available
46. Y N NA NI Permitted closure plan available
47. Y N NA NI Permitted post-closure plan available

Name of those present during the inspection: _____

Comments: NO PROBLEMS NOTED DURING INSPECTION.

Inspection Item	Corrective action required	Date to be completed

Additional comment page: Y Photos taken: Y
 The signature below certifies that the SCDHEC Inspector has personally checked each item and has answered according to the true condition existing at the time of inspection.
Will H. Arcadis Facility Representative Bill Roney SCDHEC Inspector



Attachment 2



Infrastructure · Water · Environment · Buildings

Mr. Dale Stoudemire, Manager
South Carolina Department of Health and Environmental Control
Bureau of Water/Water Pollution Control Division
Data Management Section
2600 Bull Street
Columbia, South Carolina 29201

Subject:

Schlumberger Technology Corporation, Twelvemile Creek Restoration Project
Pickens County, South Carolina
June 2011 Sampling Results Report

Dear Mr. Stoudemire:

On behalf of Schlumberger Technology Corporation (STC), ARCADIS is providing a summary of sampling results for the Twelvemile Creek Restoration Project in Pickens County for the month of June 2011 in accordance with the October 15, 2009 letter from Butch Swygert of South Carolina Department of Health and Environmental Control (SCDHEC) to Chris Moody of ARCADIS and the August 9, 2010 SCDHEC construction operation approval memorandum, which replaces the March 11, 2010 SCDHEC construction operation approval memorandum. The August 9, 2010 approval memorandum upgrades the onsite water treatment plant to a Group III – Physical/Chemical facility with a maximum discharge of 8.64 million gallons per day (MGD).

Table 1 contains the water treatment plant flow for the month of June. This data is recorded onsite and is reviewed by a South Carolina certified water treatment plant operator. The maximum daily discharge to Twelvemile Creek for June 2011 was 3.29 MGD on June 4. The average discharge to Twelvemile Creek from the water treatment plant for the month of June was 2.20 MGD.

Table 2 contains the results of the analyses described in Table 1 of the October 15, 2009 letter that were performed on the water treatment plant effluent during the month of June 2011. The Laboratory Services Reports from Rogers & Callcott Laboratory Services related to these tests are provided in Attachment A. The samples were analyzed for pH, temperature, total suspended solids and PCBs. The results for total suspended solids and PCBs were within the ranges outlined in the October 15, 2009 letter. The pH reading taken during the first week of June was not

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www.arcadis-us.com

ENVIRONMENTAL

Date:

July 28, 2011

Contact:

Lance S. Ketcham

Phone:

315.671.9163

Email:

lance.ketcham@arcadis-us.com

Our ref:

MT001019

Imagine the result

within the range outlined in the October 15, 2009 letter. Corrective measures were immediately implemented by the Contractor to address the pH in the water treatment plant as discussed in the email to SCDHEC on June 7, 2011. Subsequent pH results were within the range outlined in the October 15, 2009 letter.

Table 3 summarizes the results of the whole effluent toxicity (WET) testing. Based on the WET testing results in May 2011, the samples collected by Rogers & Callcott Laboratory Services was split between ETT Environmental, Inc (ETT) and Shealy Consulting, LLC. ETT is the laboratory that performed the previous WET testing for the project. The Laboratory Services Reports from Rogers & Callcott Laboratory Services for both laboratories are provided in Attachment B. The WET testing result for the June sampling event was within the ranges outlined in the October 15, 2009 letter for both laboratories.

If you have any questions on the above, please feel free to contact me.

Sincerely,

ARCADIS



Lance S. Ketcham
Principal Engineer

Copies:

Melinda Vickers, SCDHEC
Eric Kim, SCDHEC
Du'Bois J. Ferguson, STC
Gary Odom, STC
J. Paul Doody, ARCADIS

ARCADIS

Tables

Table 1. Daily Flow from Water Treatment Plant for June 2011. Twelvemile Creek Restoration Project, Pickens County

Date	Flow, MGD
Monthly Avg¹	MR
Daily Max¹	MR
6/1/2011	2.97
6/2/2011	3.13
6/3/2011	2.18
6/4/2011	3.29
6/5/2011	2.91
6/6/2011	2.05
6/7/2011	0.77
6/8/2011	0.86
6/9/2011	2.20
6/10/2011	1.04
6/11/2011	2.31
6/12/2011	1.70
6/13/2011	2.50
6/14/2011	2.63
6/15/2011	2.33
6/16/2011	2.59
6/17/2011	2.65
6/18/2011	3.22
6/19/2011	0
6/20/2011	1.60
6/21/2011	2.65
6/22/2011	2.66
6/23/2011	2.24
6/24/2011	2.17
6/25/2011	2.29
6/26/2011	2.83
6/27/2011	1.93
6/28/2011	1.77
6/29/2011	1.53
6/30/2011	3.00
7/1/2011	
Total Discharge to Twelvemile Creek	66.0
Days per Month	30
Average Discharge	2.20

Notes:

- The flow rates shown are recorded by a South Carolina certified wastewater treatment plant operator in the water treatment plant flow log maintained onsite. A flow rate of 0 MGD is shown in this table when no flow is recorded in the flow log for that day.
- The bolded value is the maximum daily discharge recorded.

Superscript Notes:

¹ Discharge reporting guidelines are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

Acronyms and Abbreviations:

Avg - average
 Max - maximum
 MGD - million gallons per day
 MR - monitor and report

Table 2. Weekly Effluent Sampling Result for June 2011. Twelvemile Creek Restoration Project, Pickens County

Sample Number	Location	Sample Type	Week	Sample Date and Time	pH	Temp. (°C)	TSS (mg/L)	PCB (µg/L)						
								PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
Monthly Avg.	--	--	--	--	6.0 to 8.5	--	25	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Daily Max.	--	--	--	--	6.0 to 8.5	--	45	0.5	0.5	0.5	0.5	0.5	0.5	0.5
AD01812	WTP Effluent Discharge	G	1	6/2/2011 12:20	5.7	28.8	NA	NA	NA	NA	NA	NA	NA	NA
AD01813	WTP Effluent Discharge	C		6/2/2011 12:15	NA	NA	4.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AD02304	WTP Effluent Discharge	G	2	6/9/2011 11:35	6.1	28.9	NA	NA	NA	NA	NA	NA	NA	NA
AD02305	WTP Effluent Discharge	C		6/9/2011 11:30	NA	NA	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AD02472	WTP Effluent Discharge	G	3	6/14/2011 09:25	6.3	24.7	NA	NA	NA	NA	NA	NA	NA	NA
AD02473	WTP Effluent Discharge	C		6/14/2011 09:15	NA	NA	3.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AD02914	WTP Effluent Discharge	G	4	6/21/2011 09:40	6.2	27.7	NA	NA	NA	NA	NA	NA	NA	NA
AD02915	WTP Effluent Discharge	C		6/21/2011 09:35	NA	NA	9.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AD03298	WTP Effluent Discharge	G	5	6/28/2011 09:15	6.2	27.0	NA	NA	NA	NA	NA	NA	NA	NA
AD03299	WTP Effluent Discharge	C		6/28/2011 09:10	NA	NA	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Average					6.1	27.4	4.3	-	-	-	-	-	-	-

Notes:

1. Sampling results compiled from Laboratory Services Reports provided by Rogers & Callcot Laboratory Services and submitted in tabular form as required per the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control (SCDHEC)) to Chris Moody (ARCADIS) and the 3/11/2010 SCDHEC construction and operational approval memorandum.
2. The monthly average includes non-detect readings as indicated by "<" (if applicable) and assumes a value equal to the detection limit. Monthly averages are not calculated for parameters without a detected concentration (indicated by "--").
3. Shaded values are not within the ranges provided in the 10/15/2009 letter.

Superscript Note:

¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (SDHEC) to Chris Moody (ARCADIS)

Acronyms and Abbreviations:

- °C - degrees centigrade
- G - grab sample
- C - 24-hour composite sample
- µg/L - micrograms per liter
- MGD - million gallons per day
- mg/L - milligrams per liter
- NA - not analyzed
- PCB - polychlorinated biphenyl
- Temp. - temperature

Table 3. Whole Effluent Toxicity Result for June 2011. Twelvemile Creek Restoration Project, Pickens County

WET Analysis	Monthly Average ¹	Daily Maximum ¹	Results from ETT	Results from Shealy
<i>Ceriodaphnia dubia</i> Chronic WET @ CTC=17.4%	25%	40%	5.2%	5.6%
<i>Ceriodaphnia dubia</i> Chronic WET-Reproduction @ CTC=17.4%	MR, %	MR, %	5.2%	5.6%
<i>Ceriodaphnia dubia</i> Chronic WET-Survival @ CTC=17.4%	MR, %	MR, %	0.0%	1.5%
<i>Ceriodaphnia dubia</i> Acute WET @ ATC=35.5%	--	0 ²	0	0

Notes:

1. Results of the WET testing are presented as the percent reduction relative to the control sample.
2. Samples were collected on 6/14, 6/15, and 6/17/2011. One composite sample was collected each day (sample numbers AD02403, AD02548, and AD02775, respectively) to complete the Chronic WET testing. Sample AD02403 was used in the Acute WET testing.
3. Samples were split for WET testing by ETT Environmental, Inc. (ETT) and Shealy Consulting, LLC (Shealy).

Superscript Notes:

¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

² A results of "0" indicates a passing result.

Acronyms and Abbreviations:

MR - monitor and report

NA - not analyzed

WET - whole effluent toxicity

ARCADIS

Attachments

ARCADIS

Attachment A

**Laboratory Services Report:
October 15, 2009 Table 1
Analyses**



**ROGERS & CALLCOTT
LABORATORY SERVICES**

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606

Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 06/02/2011

Time Received: 14:25

Date Reported: 06/06/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description



AD01812 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/02/2011 at 12:20



AD01813 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/02/2011 at 12:15

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Rebecca F. Musick
authorized signature

Results reviewed by:

JSO

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD01812	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/02/2011 at 12:20						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
pH (Field)	5.7	pH units		0.1	06/02/2011 12:20	LRW	SM 4500HB
Temperature (Field)	28.8	degrees C		0.1	06/02/2011 12:20	LRW	SM 2550B

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD01813	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/02/2011 at 12:15						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
3 to 5 day turn around	Completed				06/06/2011 00:00		
Total Suspended Solids	4.0	mg/l		2.0	06/02/2011 15:14	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	06/05/2011 02:09	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate)	90	%		0	06/05/2011 02:09	RKH	EPA 608
Decachlorobiphenyl, (Surrogate)	99	%		0	06/05/2011 02:09	RKH	EPA 608
Liquid-Liquid Extraction Pest/PCB 608	Completed				06/02/2011 14:35	CGW	EPA 608



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29608
 Phone (864) 232-1556 Fax (864) 232-6140
 Shipping Address: 426 Fairforest Way
 Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name SCHLUMBERGER

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers		N	N							Filtered (Yes/No)
		V	Y							Cooled (Yes/No)
		P	G							Container Type (P/G)
		K	G	2	6	L				Container Volume
		C	C							Sample Type (Grab/Composite)
		W	W	W	W					Sample Source (WW, GW, DW, Other)
		N	N							Sample Source Chlorinated (Yes/No)
		N	A	P	S					Lab Receipt Cl ₂ Check <u>MCA</u>
		N	A	7						Lab Receipt pH Check <u>16-2-11</u>
		A	A							Preserved (Code)
									A-None D-NaOH G-Boric Acid B-HNO ₃ E-HCL H-Ascorbic Acid C-H ₂ SO ₄ F-Na ₂ S ₂ O ₅ I- _____	
									COMMENTS:	

Rogers & Callcott Lab No.	Yr. / Date	Time	Sample Description	Total Number of Containers
AD 01413	6/2	1215	WATER TREATMENT PLANT EFF. DISCH.	2

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time 6/2/11 1425	Received by (Sig.) ② <u>[Signature]</u> Shipper Name & # Norma Salley	Date/Time 6-2-11 1425
Relinquished by (Sig.) ③ _____	Date/Time 	Received by (Sig.) ④ _____ Shipper Name & #	Date/Time
Relinquished by (Sig.) ⑤ _____	Date/Time 	Received by (Sig.) ⑥ _____ Shipper Name & #	Date/Time
Seal # _____ at'chd by ○		Recvd. Intact by ○ Seal # _____ at'chd by ○ Recvd. Intact by ○	

KNOWN HAZARDS ASSOCIATED WITH SAMPLES

Temperature of blank or representative sample
 At time of collection 3.2 °C
 At time of lab receipt 5.4 °C

SAMPLE SET OUT @ 1215
 ON 6/1/11 TIME PROP.
 BY R/C
 ADD 812
 PH 5.7 GRAB SAMPLE
 TEMP 28.8 TAKEN + READ
 @ 1220 ON 6/2/11 BY R/C



**ROGERS & CALLCOTT
LABORATORY SERVICES**

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 06/09/2011
Time Received: 13:50
Date Reported: 06/14/2011

South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822

Sample Number

Sample Description



AD02304 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/09/2011 at 11:35.



AD02305 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/09/2011 at 11:30

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

[Handwritten Signature]
authorized signature

Results reviewed by:

[Handwritten Signature]

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>							
AD02304	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/09/2011 at 11:35							
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>	
pH (Field)	6.1	pH units		0.1	06/09/2011 11:35	LRW	SM 4500HB	
Temperature (Field)	28.9	degrees C		0.1	06/09/2011 11:35	LRW	SM 2550B	

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>							
AD02305	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/09/2011 at 11:30							
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>	
3 to 5 day turn around	Completed				06/14/2011 00:00			
Total Suspended Solids	< RDL	mg/l		2.0	06/09/2011 14:10	JLA	SM 2540D	
Polychlorinated Biphenyls (PCBs)								
PCB-1016	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1221	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1232	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1242	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1248	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1254	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
PCB-1260	< RDL	ug/l		0.5	06/13/2011 18:34	RKH	EPA 608	
2,4,5,6-Tetrachloro-m-xylene, (Surrogate)	98	%		0	06/13/2011 18:34	RKH	EPA 608	
Decachlorobiphenyl, (Surrogate)	99	%		0	06/13/2011 18:34	RKH	EPA 608	
Liquid-Liquid Extraction Pest/PCB 608	Completed				06/09/2011 14:45	CGW	EPA 608	



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5855, Greenville, SC 29606
Phone (864) 232-1556 Fax: (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

Client Name SCHLUMBERGER

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS		N/N				Filtered (Yes/No)
			Y/Y				Cooled (Yes/No)
			P/G				Container Type (P/G)
			1/2 DW				Container Volume
			C/G				Sample Type (Grab/Composite)
			WW/WW				Sample Source (WW, GW, DW, Other)
			N/N				Sample Source Chlorinated (Yes/No)
			NA Neg				Lab Receipt Cl ₂ Check <u>NA</u>
			NA 7				Lab Receipt pH Check <u>6.9-11</u>
			A A				Preserved (Code)
	TSS				A-None D-NaOH G-Boric Acid B-HNO ₃ E-HCL H-Ascorbic Acid C-H ₂ SO ₄ F-Na ₂ S ₂ O ₅ I- _____		
	PCB				COMMENTS:		

Rogers & Callcott Lab No.	Yr./Date	Time	Sample Description	Total Number of Containers
KR40.9				
AD 023015	6/9	1130	WATER TREATMENT PLANT EFF. DISCH.	2

SAMPLER SET OUT @ 1130 on 6/8/11, Time proportional, by RTC
pH 6.1 GRAB TAKEN + Temp 28.9 / READ @ 1135 ON 6/9/11 BY RTC
AD02304

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>		Date/Time 6-9-11 1350		Received by (Sig.) ② <u>Norma Salley</u>		Date/Time 6-9-11 1350		KNOWN HAZARDS ASSOCIATED WITH SAMPLES Temperature of blank or representative sample At time of collection <u>3.5</u> °C At time of lab receipt <u>7.8</u> °C
Relinquished by (Sig.) ③ _____		Date/Time		Received by (Sig.) ④ _____		Date/Time		
Relinquished by (Sig.) ⑤ _____		Date/Time		Received by (Sig.) ⑥ _____		Date/Time		



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LABORATORY SERVICES**

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Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 06/14/2011

Time Received: 11:50

Date Reported: 06/16/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description



AD02472 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/14/2011 at 09:25



AD02473 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Annal J Ashley
authorized signature

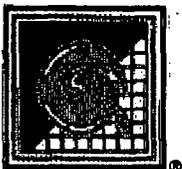
Results reviewed by:

JS

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>							
AD02472	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/14/2011 at 09:25							
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>	
pH (Field)	6.3	pH units		0.1	06/14/2011 09:25	LRW	SM 4500HB	
Temperature (Field)	24.7	degrees C		0.1	06/14/2011 09:25	LRW	SM 2550B	

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>							
AD02473	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15							
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>	
3 to 5 day turn around	Completed				06/18/2011 00:00			
Total Suspended Solids	3.8	mg/l		2.0	06/14/2011 11:57	JLA	SM 2540D	
Polychlorinated Biphenyls (PCBs)								
PCB-1016	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1221	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1232	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1242	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1248	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1254	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
PCB-1260	< RDL	ug/l		0.5	06/15/2011 21:47	RKH	EPA 608	
2,4,5,6-Tetrachloro-m-xylene, (Surrogate)	98	%		0	06/15/2011 21:47	RKH	EPA 608	
Decachlorobiphenyl, (Surrogate)	99	%		0	06/15/2011 21:47	RKH	EPA 608	
Liquid-Liquid Extraction Pest/PCB 608	Completed				06/14/2011 13:00	CGW	EPA 608	



ROGERS & CALLCOTT LABORATORY SERVICES

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Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name Schlumberger

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers																			Filtered (Yes/No)	
																			Cooled (Yes/No)	
																			Container Type (P/G)	
																			Container Volume	
																			Sample Type (Grab/Composite)	
																				Sample Source (WW, GW, DW, Other)
																				Sample Source Chlorinated (Yes/No)
																				Lab Receipt Cl. Check <u>meat</u>
																				Lab Receipt pH Check <u>16-14-11</u>
																				Preserved (Code)

A-None D-NoOH G-Boric Acid
 B-HNO₃ E-HCL H-Ascorbic Acid
 C-H₂SO₄ F-NO₂S₂O₈ I-_____

COMMENTS:

Rogers & Callcott Lab No.	Yr./Date	Time	Sample Description
AD 02473	6/14	0915	WATER TREATMENT PLANT EFF. DISCH.

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time <u>6/14/11 1150</u>	Received by (Sig.) ② <u>[Signature]</u>	Date/Time <u>6/14/11 1150</u>	KNOWN HAZARDS ASSOCIATED WITH SAMPLES Temperature of blank or representative sample At time of collection <u>3.2</u> °C At time of lab receipt <u>5.1</u> °C
Relinquished by (Sig.) ③ _____	Date/Time _____	Received by (Sig.) ④ _____	Date/Time _____	
Relinquished by (Sig.) ⑤ _____	Date/Time _____	Received by (Sig.) ⑥ _____	Date/Time _____	



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Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 06/21/2011

South Carolina Laboratory Identification 23105

Time Received: 12:07

North Carolina Laboratory Certificate Number 27

Date Reported: 06/23/2011

NELAP Laboratory Identification E87822

Sample Number

Sample Description



AD02914 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/21/2011 at 09:40



AD02915 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/21/2011 at 09:35

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We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Amy J. Sheehy
authorized signature

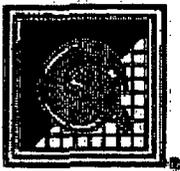
Results reviewed by:

MER

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02914	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/21/2011 at 09:40						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
pH (Field)	6.2	pH units		0.1	06/21/2011 09:40	LRW	SM 4500HB
Temperature (Field)	27.7	degrees C		0.1	06/21/2011 09:40	LRW	SM 2550B

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02915	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/21/2011 at 09:35						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
3 to 5 day turn around	Completed				06/22/2011 00:00		
Total Suspended Solids	9.6	mg/l		2.0	06/21/2011 14:19	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	06/22/2011 21:35	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate)	98	%		0	06/22/2011 21:35	RKH	EPA 608
Decachlorobiphenyl, (Surrogate)	99	%		0	06/22/2011 21:35	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 608	Completed				06/21/2011 12:45	DBB	EPA 608



ROGERS & CALLCOTT LABORATORY SERVICES

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Phone: (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

Client Name Schlumberger

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers																			Filtered (Yes/No)
																			Cooled (Yes/No)
																			Container Type (P/G)
																			Container Volume
																			Sample Type (Grab/Composite)
																			Sample Source (WW, GW, DW, Other)
																			Sample Source Chlorinated (Yes/No)
																			Lab Receipt Cl ₂ Check
																			Lab Receipt pH Check <u>mes/16-21-11</u>
																			Preserved (Code)
																		A=None B-HNO ₃ C-H ₂ SO ₄	
																		D-NaOH E-HCL F-Na ₂ S ₂ O ₈	
																		G-Boric Acid H-Ascorbic Acid I-_____	
																		COMMENTS:	

Rogers & Callcott Lab No.	Yr./Date	Time	Sample Description	Total Number of Containers
AD 02915	6/21	0935	WAD TREATMENT PLANT EFF. DISCH.	3

A=None
 B-HNO₃
 C-H₂SO₄
 D-NaOH
 E-HCL
 F-Na₂S₂O₈
 G-Boric Acid
 H-Ascorbic Acid
 I-_____

COMMENTS:
 SAMPLE SET OUT @ 0935,
 6/20/11, Time prep. by RTC
 AD02914
 pH 6.2 GRAB TAKEN +
 TEMP 27.7 READ @ 0940
 ON 6/21/11 BY RTC

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time 6/21/11 1207	Received by (Sig.) ② <u>[Signature]</u> Shipper Name & #	Date/Time 6.21.11 1207	KNOWN HAZARDS ASSOCIATED WITH SAMPLES * SUFFICIENT SAMPLE FOR FIELD DUPLICATES Temperature of blank or representative sample At time of collection <u>3.2</u> °C At time of lab receipt <u>5.5</u> °C
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	



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LABORATORY SERVICES**

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606

Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 06/28/2011

Time Received: 12:07

Date Reported: 06/30/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description



AD03298 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/28/2011 at 09:15



AD03299 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/28/2011 at 09:10

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We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

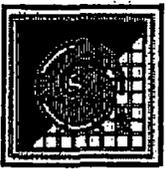
Results released by: Ann D Ashley
authorized signature

Results reviewed by: SS

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD03298	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 06/28/2011 at 09:15						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
pH (Field)	6.2	pH units		0.1	06/28/2011 09:15	LRW	SM 4500HB
Temperature (Field)	27.0	degrees C		0.1	06/28/2011 09:15	LRW	SM 2550B

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD03299	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/28/2011 at 09:10						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
3 to 5 day turn around	Completed				06/30/2011 00:00		
Total Suspended Solids	< RDL	mg/l		2.0	06/28/2011 14:35	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	06/30/2011 01:19	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate)	106	%		0	06/30/2011 01:19	RKH	EPA 608
Decachlorobiphenyl, (Surrogate)	114	%		0	06/30/2011 01:19	RKH	EPA 608
Liquid-Liquid Extraction Pest/PCB 608	Completed				06/28/2011 13:15	DBB	EPA 608



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
 Phone (864) 232-1556 Fax (864) 232-6140
 Shipping Address: 426 Fairforest Way
 Greenville, SC 29607

CHAIN OF CUSTODY RECORD

Client Name SCHLUMBERGER
 Address _____
 Report To: _____
 Telephone No. _____ FAX No. _____
 PO No. _____ Project No. _____

Total Number of Containers																Filtered (Yes/No)
																Cooled (Yes/No)
																Container Type (P/G)
																Container Volume
																Sample Type (Grab/Composite)
																Sample Source (WW, GW, DW, Other)
																Sample Source Chlorinated (Yes/No)
																Lab Receipt Cl ₂ Check <u>mcu</u>
																Lab Receipt pH Check <u>16-28-11</u>
																Preserved (Code)

A-None D-NoOH G-Boric Acid
 B-HNO₃ E-HCL H-Ascorbic Acid
 C-H₂SO₄ F-Na₂S₂O₅ I- _____

COMMENTS:

Rogers & Callcott Lab No.	Yr./Date	Time	Sample Description
AD 03299	6/28	0910	WATER TREATMENT PLANT EFF. DISCH.

PARAMETERS

SAMPLER SET OUT @ 0910,
 6/27/11, TIME PROP. BY R+C
 AD03298
 pH 6.2 } GRAB TAKEN +
 TEMP 27.0° READ @ 0915
 ON 6/28/11 BY R+C

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time 6/28/11 1207	Received by (Sig.) ② <u>[Signature]</u>	Date/Time 6-28-11 1207	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥	Date/Time	
Seal # _____ at'chd by ○ Recvd. Intact by ○ Seal # _____ at'chd by ○ Recvd. Intact by ○				Temperature of blank or representative sample At time of collection <u>33</u> °C At time of lab receipt <u>54</u> °C

ARCADIS

Attachment B

**Laboratory Services Report:
Whole Effluent Toxicity Testing**



P.O. Box 5655, Greenville, SC 29606

Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Reported: 06/23/2011

*South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822*

Sample Number

Sample Description



AD02403 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15



AD02548 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35



AD02775 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Anne Dorn
authorized signature

Results reviewed by:

MER

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary



**ROGERS & CALLCOTT
LABORATORY SERVICES**

Case Narrative

AD02403 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15

Composite sample AD02403 was subcontracted to ETT for Acute and Chronic Toxicity tests.

AD02548 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AD02775 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02403	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/23/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02548	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/23/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02775	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/23/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.



P.O. Box 16414, Greenville, SC 29608

(864) 877-8942 • Fax (864) 877-8938

4 Craftsmen Court, Greer, SC 29650

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species: *Ceriodaphnia dubia*

Client: SCHLUMBERGER

Facility: EFFLUENT

NPDES #: SC

Test Date: 14-Jun-11

Laboratory ID#: T37948

Test Reviewed and Approved By:

Robert W. Kelley, Ph.D.
Laboratory Manager



Certification #E87819

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819 Florida Dept. of Health. Included results pertain only to provided samples.

SCDHEC Certification #23104

NCDENR Certification # 022



DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results Using Linear Interpolation

TWELVE MILE CREEK RESTORATION P Permit number SC Discharge number
FINAL LIMITS 04/01/2010- Parameter Code TCP3B MLOC=1 CTC= 17.40% effluent

Monitoring period	From	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Year</th><th>Month</th><th>Day</th></tr> <tr><td style="text-align: center;">11</td><td style="text-align: center;">6</td><td style="text-align: center;">1</td></tr> </table>	Year	Month	Day	11	6	1	To	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Year</th><th>Month</th><th>Day</th></tr> <tr><td style="text-align: center;">11</td><td style="text-align: center;">6</td><td style="text-align: center;">30</td></tr> </table>	Year	Month	Day	11	6	30
Year	Month	Day														
11	6	1														
Year	Month	Day														
11	6	30														

Mortality Data

Reproduction Data

		# Adults	# Dead	Group Average	Group Variance
Date	<u>14-Jun-11</u>	10	0	21.3	30.90
Lab ID	<u>23104</u>	10	0	21.4	36.04
		10	0	19.9	30.77
		10	0	20.6	37.82
IC25=	<u>49.61%</u>	10	0	15.9	18.99
48 hr Chronic LC50 =	<u>> 100.0%</u>	10	5	0.3	0.90

% Survival Effect at CTC= 0.0%
% Reproduction Effect at CTC= 6.2%

Mortality Data

Reproduction Data

		# Adults	# Dead	Group Average	Group Variance
Date					
Lab ID	<u>23104</u>				

% Survival Effect at CTC=
% Reproduction Effect at CTC=

Signature of Principal Executive Officer or Authorized Agent _____
Name/Title of Principal Executive Officer (typed or printed) _____

PERMITTEE NAME/ADDRESS: (Include Facility Name/Location if Different)

NAME TWELVE MILE CREEK RESTORATION PROJECT

ADDRESS PICKENS COUNTY, SC

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

SC
PERMIT NUMBER

DISCHARGE NUMBER

MINOR

FINAL LIMITS

DMR VALID:

04/01/2010-

FACILITY LOCATION TWELVE MILE CREEK RESTORATION PROJECT
PICKENS COUNTY, SC

MONITORING PERIOD						
YEAR	MO	DAY	TO	YEAR	MO	DAY
11	8	01		11	8	30

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUANTITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	Sample Type	
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS				
TCP3B LAB ID: 23104 Effect Statre 7Day Chr Ceriodaphnia MLOC-1	SAMPLE MEASUREMENT	*****	*****	****	*****	5.2	5.2		PER-CENT	0	1/30	24
	PERMIT REQUIREMENT	*****	*****	****	*****	25	40					
TJP3B LAB ID: 23104 Mortality 7Day Chr CERIODAPHNIA MLOC-1	SAMPLE MEASUREMENT	*****	*****	****	*****	0.0	0.0		PER-CENT	0	1/30	24
	PERMIT REQUIREMENT	*****	*****	****	*****	REPORT QTR AVG	REPORT MAXIMUM					
TVP3B LAB ID: 23104 Repro Reduc Statre 7d Chr Ceriodaphnia MLOC-1	SAMPLE MEASUREMENT	*****	*****	****	*****	5.2	5.2		PER-CENT	0	1/30	24
	PERMIT REQUIREMENT	*****	*****	****	*****	REPORT QTR AVG	REPORT MAXIMUM					
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE	DATE
TYPED OR PRINTED			0	
			CODE NUMBER	YEAR MO DAY

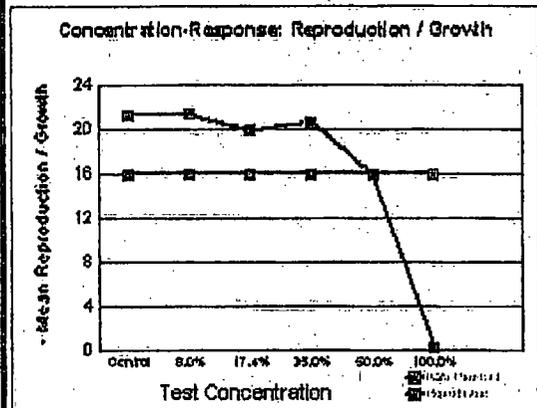
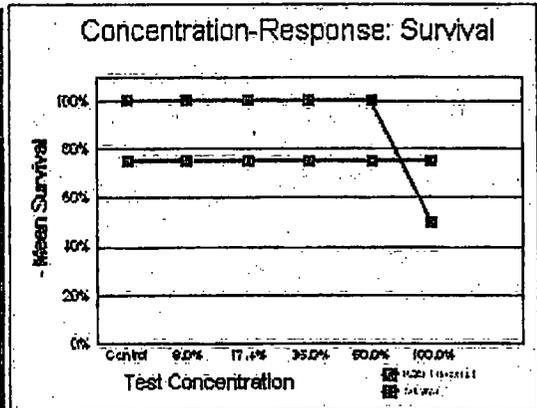
COMMENTS AND EXPLANATIONS OF ANY VIOLATIONS (Reference all attachments here):
Chronic toxicity CIC=17.4% effluent

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST Statistical Analyses

Client: **TWELVE MILE CREEK RESTORATION PROJECT**
 Sample Identification: **EFFLUENT**
 Test Date: **14-Jun-2011**

Tests for Normality and Heterogeneity of Variance			Sample Use			
Parameter	Test Used	Result		Sample Date	Sample Used	
Normality	N/A	N/A	Sample A	14-Jun-11	14-Jun-11	15-Jun-11
Variance	N/A	N/A	Sample B	16-Jun-11	16-Jun-11	17-Jun-11
			Sample C	18-Jun-11	18-Jun-11	19-Jun-11
						20-Jun-11

Tests for Differences in Survival and Reproduction						
Test Type Used: Linear Interpolation						
% Effluent						
Effect	Control	8.0%	17.4%	35.0%	50.0%	100.0%
Survival	100.0%	100.0%	100.0%	100.0%	100.0%	50.0%
% reduction		0.0%	0.0%	0.0%	0.0%	50.0%
Reproduction	21.3	21.4	19.9	20.6	15.9	0.3
% reduction (smoothed)		0.0%	5.2%	5.2%	25.5%	98.6%
Variance	30.90	36.04	30.77	37.82	18.99	0.90
Acceptability Criteria		Value	Upper Limit	Lower Limit		
CV:Coeff. of Variation		26.1%	42.0%	8.9%		
PMSD:% MSD		22.8%	37.0%	11.0%		
MSD:Min. Sign. Diff.		4.8	Acceptability criteria limits not exceeded			
IC25 Point Estimates			TEST RESULTS			
Survival	IC25=	75.0%	%Reduction per Linear Interpolation			
Reproduction	IC25=	49.6%	@CTC of 17.4%			
Hypothesis Testing			Survival effect		0.0%	
NOBC Reproduct		35.0%	Reproduction effect		5.2%	
ChV. Reproducti		41.8%	PASS			



Comments

source	rep	Test Day								Total	
		1	2	3	4	5	6	7	8		
S6 6/3	A			0	0	7	13			20	control
V7 6/3	B			0	4	11	0			15	
U7 6/3	C			5	0	9	11			25	
O4 6/2	D			3	0	9	12			24	
Q2 6/2	E			0	3	11	11			25	
O3 6/2	F			5	0	7	13			25	
AA5 6/3	G			0	5	10	0			15	
AA4 6/3	H			0	4	12	13			29	
AA3 6/3	I			0	4	8	0			12	
U8 6/3	J			0	3	8	12			23	21.3
8	A			0	4	10	13			27	
	B			0	6	9	0			15	
	C			4	0	10	13			27	
	D			4	0	8	11			23	
	E			0	4	11	0			15	
	F			4	0	12	13			29	
	G			0	5	10	0			15	
	H			0	5	9	9			23	
	I			0	5	9	0			14	mean
	J			3	0	10	13			26	21.4
17.4	A			0	4	0	12			16	
	B			0	3	9	0			12	
	C			4	0	11	13			28	
	D			5	0	10	11			26	
	E			3	0	11	12			26	
	F			0	0	6	13			19	
	G			0	5	10	0			15	
	H			0	4	8	11			23	
	I			0	4	11	0			15	mean
	J			0	0	10	9			19	19.9
35	A			0	4	8	9			21	
	B			0	3	9	0			12	
	C			3	0	12	12			27	
	D			5	0	10	11			26	
	E			3	0	9	12			24	
	F			4	0	11	9			24	
	G			0	2	11	0			13	
	H			0	5	6	13			24	
	I			0	3	8	0			11	mean
	J			3	0	10	11			24	20.6
50	A			0	3	4	11			18	
	B			0	3	10	0			13	
	C			0	0	6	9			15	
	D			0	0	6	8			14	
	E			0	2	5	11			18	
	F			0	2	7	8			17	
	G			0	4	7	0			11	
	H			0	3	10	8			21	
	I			0	2	7	0			9	mean
	J			3	0	11	9			23	15.9
100	A			0	0	0	0			0	
	B			0	0	0	0			0	
	C			0	0	0	0			0	
	D			0	0	0	0			0	
	E			0	0	0	0			0	
	F			0	D					0	
	G			0	D					0	
	H			0	0	0	0			0	
	I			0	0	0	0			0	mean
	J			3	D					3	0.3
renew	JS	AE	AE	AE	BB				End Date		
fed	JS	AE	AE	AE	BB				20-Jun-11		
time fed & renew	03:00 AM	03:00 PM	03:00 PM	03:12 AM	02:48 PM			02:00 PM	JS		
New temp. °C	24.6	24.2	24.4	24.3	24.8						
Old temp. °C	25.3	25.3	25.1	25.3	25.1				25.3		

D=Dead N/A=Lost or not used

Lab#	T37948
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	0
County	0
Month	6
Start & fed Date	14-Jun-11
Start & fed Time	1540
Started & fed By	JS
Test Organism	Ceriodaphnia dubia
Neo. born date	13-Jun-11
Neo. born time	BATCH 2
Test Type	SCCD
Dilution Water	MHSF
Units for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 ml
Incubator #	1
Light	16L/8dk
Initial Temp °C	25.3
Selenastrum	0.05 ml
YAT	0.05 ml
Test method	EPA 821-R-02-013:1002

Comments
100% pH STARTS AT 7.8 WE HAVE TO READ IT 5 TO 6 TIMES FOR AN ACCURATE READING BB



South Carolina Department of Health and Environmental Control

DMR Attachment for Pass/Fail Whole Effluent Toxicity Test Results

TWELVE MILE CREEK RESTORATION PROJECT Permit number SC

Discharge number

Final Limits 04/01/2010 -

Parameter code TGA3B

MLOC=1 ATC=35.50% effluent

Monitoring period	From	Year	Month	Day	To	Year	Month	Day
		11	6	01		11	6	30

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date 13-Jun-11
Lab ID 23104

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control	20	0	PASS			
Test	20	2				

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date _____
Lab ID _____

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date _____
Lab ID _____

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date _____
Lab ID _____

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date _____
Lab ID _____

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests

Reproduction Data-Chronic Tests Only

Date _____
Lab ID _____

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Signature of Principal Executive Officer or Authorized Agent _____
 Name/Title of Principal Executive Officer (*typed or printed*) _____
 DHEC 3420 (8/05)

		Control Survival and Reproduction by Test Day								
source	rep	1	2	3	4	5	6	7	8	Total
AA-FF 6/2	A		0							0
S-X 6/3	A		0							0
M-R 6/2	A		0							0
RANDOM	A		0							0
	A		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	C		0							0
	C		0							0
	C		0							0
	C		0							0
	C		0							0
	D		0							0
	D		0							0
	D		0							0
D		0							0	
										Mean
										0.0

		35.5 % Effluent Survival and Reproduction by Test Day								
		1	2	3	4	5	6	7	8	Total
AA-FF 6/2	A		0							0
S-X 6/3	A		0							0
M-R 6/2	A		D							0
RANDOM	A		0							0
	A		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	B		0							0
	C		D							0
	C		0							0
	C		0							0
	C		0							0
	C		0							0
	D		0							0
	D		0							0
	D		0							0
D		0							0	
										Mean
										0.0

Old temp. °C										
D=Dead NA=Lost										
Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Stand Test

Flow	T37949
Location	SCHLUMBERGER
Effluent	EFFLUENT
Flow	0
Flow	0
Flow	6
Flow	14-Jun-11
Flow	1800
Flow	#
Flow	Ceriodaphnia dubia
Flow	40707
Flow	BATCH 2
Flow	MHSF
Flow	%
Flow	35.5
Flow	30 ml
Flow	15 ml
Flow	1
Flow	16L/8dk
Flow	24.4
Flow	0.05 ml
Flow	0.05 ml
Flow	EPA 821-R-02-013:1002



Comments
NEONATES FED 1400 BY JS



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5855, Greenville, SC 29606
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 1

Client Name Rogers + Callcott

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS ACUTE TOXICITY	N								Filtered (Yes/No)	
		Y								Cooled (Yes/No)	
		P									Container Type (P/G)
		WG									Container Volume
		C									Sample Type (Grab/Composite)
		WW									Sample Source (WW, GW, DW, Other)
		N									Sample Source Chlorinated (Yes/No)
											Lab Receipt Cl Check
											Lab Receipt pH Check
											Preserved (Code)

A-None D-NaOH G-Boric Acid
B-HNO₃ E-HCL H-Ascorbic Acid
C-H₂SO₄ F-Na₂S₂O₅ I-_____

COMMENTS:

37948A / 37949

SAMPLES SET OUT @ 0915
ON 6/13/11 TIME P-UP.
By R/C

Rogers & Callcott Lab No.	Yr. / Date	Time	Sample Description
AD 02403	6/14	0915	WATER TREATMENT PLANTS EFF DISCH.

SAMPLER Relinquished by (Sig.) ① <i>[Signature]</i>	Date/Time 6/14/11 1420	Received by (Sig.) ② <i>[Signature]</i>	Date/Time 6/14/11 1420	KNOWN HAZARDS ASSOCIATED WITH SAMPLES * DELIVERED TO ETT LAB
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥	Date/Time	Temperature of blank or representative sample At time of collection _____ °C At time of lab receipt <u>6.0</u> °C
Seal # _____ at'chd by <input type="checkbox"/> Recvd. Intact by <input type="checkbox"/>	Seal # _____ at'chd by <input type="checkbox"/> Recvd. Intact by <input type="checkbox"/>			



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 Fax: (864) 232-8140
Shipping Address: 428 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name ROGERS & CALLCOTT

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers.	PARAMETERS CHRONIC TOXICITY	N							Filtered (Yes/No)
		Y							Cooled (Yes/No)
		P							Container Type (P/G)
		VG							Container Volume
		C							Sample Type (Grab/Composite)
		WW							Sample Source (WW, GW, DW, Other)
		N							Sample Source Chlorinated (Yes/No)
									Lab Receipt Cl ₂ Check
									Lab Receipt pH Check

Rogers & Callcott Lab No.	Yr. <u>11</u> Date	Time	Sample Description
AD 02548	6/15	0935	WASTE TREATMENT PLANT * EFF. DISCH.

SAMPLER Relinquished by (Sig.) ① <u>Rogers & Callcott</u>	Date/Time <u>6/15/11 1416</u>	Received by (Sig.) ② <u>[Signature]</u> Shipper Name & #	Date/Time <u>6-15-11 1416</u>	KNOWN HAZARDS ASSOCIATED WITH SAMPLES <u>* DELIVERED TO ETT LAB</u>
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	
Seal # _____ at'chd by <input type="radio"/> Recvd. Intact by <input type="radio"/> Seal # _____ at'chd by <input type="radio"/> Recvd. Intact by <input type="radio"/>				Temperature of blank or representative sample At time of collection <u>32</u> °C At time of lab receipt <u>38</u> °C



ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5855, Greenville, SC 29606
Phone (864) 232-1558 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name Rogers & Callcott

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS	A	CHLORINE TOXICITY	N	Filtered (Yes/No)
				Y	Cooled (Yes/No)
				P	Container Type (P/G)
				WG	Container Volume
				C	Sample Type (Grab/Composite)
				WW	Sample Source (WW, GW, DW, Other)
				N	Sample Source Chlorinated (Yes/No)
					Lab Receipt Cl ₂ Check
					Lab Receipt pH Check
					Preserved (Code)

A=None D=NaOH G=Boric Acid
B=HNO₃ E=HCl H=Ascorbic Acid
C=H₂SO₄ F=Na₂S₂O₅ I= _____

COMMENTS:

37948C

SAMPLE SET AT 0930 ON
6/16/11. TIME prep. By R/C

Rogers & Callcott Lab No.	Yr. <u>11</u> Date	Time	Sample Description
AD 02775	6/17	0930	WATER TREATMENT PLANT * ETT. DISCH.

SAMPLER Relinquished by (Sig.) ① <i>[Signature]</i>	Date/Time 6/17/11 1400	Received by (Sig.) ② <i>[Signature]</i> Shipper Name & #	Date/Time GTM 1400	KNOWN HAZARDS ASSOCIATED WITH SAMPLES * DELIVERED TO ETT LAB
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	Temperature of blank or representative sample At time of collection <u>37</u> °C At time of lab receipt <u>31</u> °C
Seal # _____ at'chd by <input type="radio"/> Recvd. Intact by <input type="radio"/>	Seal # _____ at'chd by <input type="radio"/> Recvd. Intact by <input type="radio"/>			



**ROGERS & CALLCOTT
LABORATORY SERVICES**

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606

Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Reported: 06/21/2011

*South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822*

Sample Number

Sample Description

	AD02404	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15
	AD02549	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35
	AD02774	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:


authorized signature

Results reviewed by:



Carbon copy: Email to L Ketcham S Handley A Kohler S Cary



**ROGERS & CALLCOTT
LABORATORY SERVICES**

Case Narrative

AD02404 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15

Composite sample AD02404 was subcontracted to Shealy Consulting for Acute and Chronic Toxicity tests.

AD02549 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AD02774 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02404	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/14/2011 at 09:15						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/21/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed two subcontract reports which include a total of 15 pages for Acute and Chronic Toxicity from Shealy Consulting LLC.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02549	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/15/2011 at 09:35						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/21/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed two subcontract reports which include a total of 15 pages for Acute and Chronic Toxicity from Shealy Consulting LLC.

<u>Sample Number</u>	<u>Sample Description, Date and Time Collected</u>						
AD02774	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 06/17/2011 at 09:30						
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Flag</u>	<u>RDL</u>	<u>Date/Time</u>	<u>Analyst</u>	<u>Method</u>
Subcontracted Sample Analysis	Completed				06/21/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed two subcontract reports which include a total of 15 pages for Acute and Chronic Toxicity from Shealy Consulting LLC.



Reported To: **ROGERS & CALLCOTT LABORATORY SERVICES
ANNE NORRIS
PO BOX 5655
GREENVILLE, SC 29606**

48 HOUR ACUTE BIOASSAY WITH CERIODAPHNIA DUBIA (EPA METHOD 2002.0)

REPORTED BY/ISSUE DATE: *Laura Shealy 6-16-11*
LAURA SHEALY - TECHNICAL DIRECTOR
 (803) 808-3113

SAMPLE LOCATION: WWTP EFFLUENT

TEST CONCENTRATION: 35.5%

Test Start Date/Time: 06/14/11 1610 Test End Date/Time: 06/16/11 1435

SAMPLE ID	COLLECTION DATE/TIME	DATE/TIME RECEIVED @ TOX LAB
A736	06/14/11 0915	06/14/11 1428

SUMMARY OF SURVIVAL

TREATMENT	# ADULTS	# DEAD	TEST RESULTS PASS/FAIL
CONTROL	20	0	PASS
35.5%	20	0	

LABORATORY WATER-MODERATELY HARD SYNTHETIC WATER
 MANUAL TITLE - "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms"

FISHER'S STATISTIC (P value) = 1.0000 (PASS = \geq 0.05)

This report has been prepared and reviewed with Shealy's Quality Assurance Management Plan (QAMP). The test results meet the quality assurance and quality control requirements specified by the National Environmental Laboratory Accreditation Conference (NELAC) as documented in Shealy's Standard Operating Procedures and QAMP. Any data qualifiers or anomalies associated with sample analysis are contained in the comments section below. This report shall not be reproduced, except in its entirety, without the written approval of Shealy Consulting, LLC.

ALL ANALYSES FOR THIS TEST WERE CONDUCTED AT:

TOXICITY LABORATORY
 603 S. Lake Drive
 Lexington, SC 29072
 SC DHEC No. 32566
 NELAC No. EB7630

www.shealyconsulting.net

Shealy Consulting, LLC

Toxicity Department

SC DHEC No. 32566

NELAC No. E87630

Case Narrative

Shealy Consulting, LLC

Lot Number: A736

This Report of Analysis contains the toxicity result(s) only for the sample(s) listed on the report cover sheet and this Case Narrative. The sample receiving date is documented on the report cover sheet as well as the dates of use associated with each sample.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Consulting, LLC ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Pass/Fail test modifications of the EPA Method adhere to requirements of the clients SC NPDES permit.

If you have any questions regarding this report, please contact the Toxicity Technical Director listed on the cover page or the Toxicity Project Manager – Angie Norman (803) 808-3113 x 200, anorman@shealyconsulting.net.

Shealy Consulting, LLC
603 S. Lake Drive
Lexington, SC 29072 (803) 808-3113 Fax (803) 808-3119 www.shealyconsulting.net

Acute Pass Fall-48 Hr Survival

Start Date: 6/14/2011	Test ID: Rogers/Cal	Sample ID: XX9999999-NPDES Permit #
End Date: 6/16/2011	Lab ID: SCLLC	Sample Type: EFF2-Industrial
Sample Date: 6/14/2011	Protocol: EPAAW02-EPA/821/R-02-01	Test Species: CD-Ceriodaphnia dubia

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
35.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
35.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	1.0000	1.0000	0	20	20	20		
35.5	1.0000	1.0000	0	20	20	20	1.0000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	35.5	>35.5		2.8169
Treatments vs D-Control				

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date: 5/18/2011 Test ID: 15ACDRT Sample ID: REF-Ref Toxicant
 End Date: 5/20/2011 Lab ID: SCLLC Sample Type: REF TOX
 Sample Date: Protocol: EPAAW02-EPA/821/R-02-01: Test Species: CD-Ceriodaphnia dubia
 Comments:

Conc-mg/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
125	1.0000	1.0000	1.0000	1.0000
250	1.0000	1.0000	1.0000	1.0000
500	1.0000	1.0000	1.0000	1.0000
1000	1.0000	1.0000	1.0000	1.0000
2000	0.8000	1.0000	1.0000	1.0000
4000	0.0000	0.0000	0.0000	0.0000

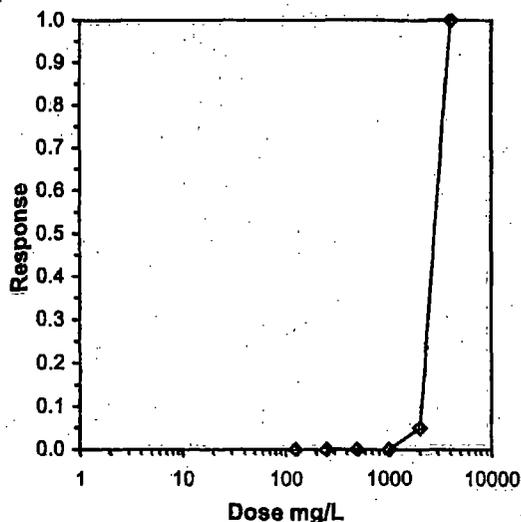
Conc-mg/L	Transform: Arcsin Square Root							Number Resp	Total Number
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
125	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
250	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
500	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
1000	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
2000	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	1	20
4000	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4	20	20

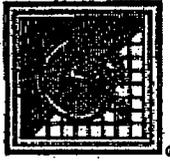
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.46508	0.884	-3.0206	13.9892
Equality of variance cannot be confirmed				

Trimmed Spearman-Kärber

Trim Level	EC50	95% CL	
0.0%	2732.08	2553.6	2923.04
5.0%	2777.3	2675.27	2883.22
10.0%	2777.3	2675.27	2883.22
20.0%	2777.3	2675.27	2883.22
Auto-0.0%	2732.08	2553.6	2923.04

REFERENCE TOXICANT IS IN RANGE @ 2732.08 MG/L
 UPPER LIMIT = 3239.17 MG/L
 LOWER LIMIT = 1247.89 MG/L





ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 6656, Greenville, SC 29608
Phone (864) 232-1656 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name Rogers & Callcott

Address See above

Report To: Anne Norris

Telephone No. SEE ABOVE FAX No. SEE ABOVE

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS Acute and Chronic Toxicity	N								Filtered (Yes/No)	
		Y								Cooled (Yes/No)	
		P									Container Type (P/G)
		Eq									Container Volume
		C									Sample Type (Grab/Composite)
		WW									Sample Source (WW, GW, DW, Other)
		NA									Sample Source Chlorinated (Yes/No)
											Lab Receipt Cl Check
											Lab Receipt pH Check
											Preserved (Code)

A-None D-NaOH G-Boric Acid
B-HNO₃ E-HCL H-Ascorbic Acid
C-H₂SO₄ F-H₂O₂ I-_____

COMMENTS:

② Dilutions based on email from Anne Norris

SUBCONTRACTED TO SHEALY CONSULTANTS

A736 TRC=0.01

Rogers & Callcott Lab No.	Yr. II Date	Time	Sample Description
AD 02404	6-14	0915	WWTP Effluent

SAMPLER Relinquished by (Sig.) ① <i>[Signature]</i>	Date/Time 6/14/11 1150	Received by (Sig.) ② <i>[Signature]</i>	Date/Time 6-14-11 1150
Relinquished by (Sig.) ③ <i>[Signature]</i>	Date/Time 6-14-11 1219	Received by (Sig.) ④ <i>[Signature]</i>	Date/Time 6-14-11 1219
Relinquished by (Sig.) ⑤ <i>[Signature]</i>	Date/Time 6/14/11 1428	Received by (Sig.) ⑥ <i>[Signature]</i>	Date/Time 6/14/11 1428

KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Temperature of blank or representative sample
At time of collection _____ °C
At time of lab receipt <u>5.2</u> °C



Reported To: **ROGERS & CALLCOTT LABORATORY SERVICES**
ANNE NORRIS
PO BOX 5655
GREENVILLE, SC 29606

3 BROOD CHRONIC BIOASSAY WITH CERIODAPHNIA DUBIA (EPA METHOD 1002.0)

REPORTED BY/ISSUE DATE: *Laura Shealy 6-20-11*
LAURA SHEALY - TECHNICAL DIRECTOR
(803) 808-3113

SAMPLE LOCATION: WWTP EFFLUENT

Test Start Date/Time: 06/14/11 1500

Test End Date/Time: 06/19/11 2030

SAMPLE ID	COLLECTION DATE/TIME	DATE/TIME RECEIVED @ TOX LAB
A736	06/14/11 0915	06/14/11 1428
A743	06/15/11 0935	06/16/11 1040
A756	06/17/11 0930	06/18/11 0915

SUMMARY OF SURVIVAL AND REPRODUCTION

TREATMENT	REPRODUCTION (Average young/female) SMOOTHED	% EFFECT SURVIVAL	% EFFECT REPRODUCTION
CONTROL	17.9		
8	17.6	5.56	1.52
17.4	17.6	5.56	1.52
35	17.4	13.3	2.79
50	14.8	13.3	17.3
100	10.0	13.3	44.1

LABORATORY WATER- MODERATELY HARD SYNTHETIC WATER
 MANUAL TITLE - "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms"

STATISTICAL PROGRAM USED: TOXCALC 5.0 LINEAR INTERPOLATION

REPRODUCTION IC25	48 HOUR LC50	7 DAY SURVIVAL IC25	NOEC	REF TOX DATE	CONTROL % SURVIVAL
64.3	>100	>100	50	05/20/11	100

This report has been prepared and reviewed with Shealy's Quality Assurance Management Plan (QAMP). The test results meet the quality assurance and quality control requirements specified by the National Environmental Laboratory Accreditation Conference (NELAC) as documented in Shealy's Standard Operating Procedures and QAMP. Any data qualifiers or anomalies associated with sample analysis are contained in the comments section below. This report shall not be reproduced, except in its entirety, without the written approval of Shealy Consulting, LLC.

ALL ANALYSES FOR THIS TEST WERE CONDUCTED AT:

TOXICITY LABORATORY
 603 S. Lake Drive
 Lexington, South Carolina 29072
 SC DHEC No. 32566
 NELAC No. E87630

www.shealyconsulting.net

Shealy Consulting, LLC

Toxicity Department

SC DHEC No. 32566

NELAC No. E87630

Case Narrative

Shealy Consulting, LLC

Lot Number: A736, A743, A756

This Report of Analysis contains the toxicity result(s) only for the sample(s) listed on the report cover sheet and this Case Narrative. The sample receiving date is documented on the report cover sheet as well as the dates of use associated with each sample.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Consulting, LLC ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

The effluent concentrations used in this test are required by the client's NPDES Permit and may deviate from EPA Toxicity manual requirements for dilution series that are not greater than or equal to 0.5.

If you have any questions regarding this report, please contact the Toxicity Technical Director listed on the cover page or the Toxicity Project Manager – Angie Norman (803) 808-3113 x 200, anorman@shealyconsulting.net.

Ceriodaphnia Survival and Reproduction Test-Reproduction

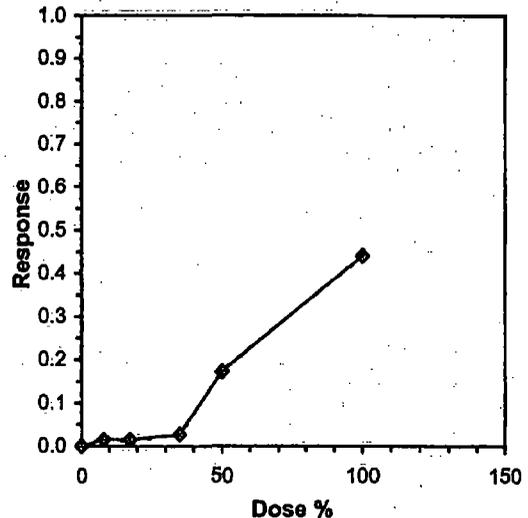
Start Date: 6/14/2011 Test ID: ROGERS&CAL Sample ID: XX9999999-NPDES Permit #
 End Date: 6/19/2011 Lab ID: SCLLC Sample Type: EFF1-POTW
 Sample Date: 6/14/2011 Protocol: EPAFW02-EPA/821/R-02-01; Test Species: CD-Ceriodaphnia dubia
 Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	20.000	9.000	24.000	19.000	19.000	15.000	19.000	24.000	21.000	9.000
8	18.000	23.000	17.000	18.000	0.000	21.000	16.000	23.000	22.000	
17.4	18.000	22.000	20.000	18.000	15.000	21.000	22.000	15.000	15.000	11.000
35	21.000	23.000	0.000	25.000	0.000	21.000	21.000	24.000	21.000	18.000
50	15.000	17.000	0.000	16.000	12.000	12.000	14.000	20.000	21.000	21.000
100	11.000	0.000	10.000	10.000	13.000	18.000	14.000	11.000	7.000	6.000

Conc-%	Transform: Untransformed							1-Tailed			Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	17.900	1.0000	17.900	9.000	24.000	29.963	10				17.900	1.0000
8	17.556	0.9808	17.556	0.000	23.000	40.390	9	0.118	2.288	6.669	17.628	0.9848
17.4	17.700	0.9888	17.700	11.000	22.000	20.638	10	0.070	2.288	6.491	17.628	0.9848
35	17.400	0.9721	17.400	0.000	25.000	53.858	10	0.176	2.288	6.491	17.400	0.9721
50	14.800	0.8268	14.800	0.000	21.000	41.870	10	1.093	2.288	6.491	14.800	0.8268
*100	10.000	0.5587	10.000	0.000	18.000	48.990	10	2.784	2.288	6.491	10.000	0.5587

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Kolmogorov D Test indicates non-normal distribution ($p \leq 0.01$)	1.3849	1.035	-1.4916	2.10493						
Bartlett's Test indicates equal variances ($p = 0.12$)	8.84382	15.0863								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnnett's Test Treatments vs D-Control	50	100	70.7107	2	6.49138	0.36265	95.9386	40.2495	0.05048	5, 53

Linear Interpolation (200 Resamples)					
Point	%	SD	95% CL		Skew
IC05	37.279	14.758	2.320	43.646	0.0483
IC10	42.442	14.864	4.640	56.968	-0.3681
IC15	47.606	14.083	6.959	66.989	-0.3557
IC20	55.000				
IC25	64.323				
IC40	92.292				
IC50	>100				



CALCULATION OF VARIANCE WORKSHEET

CLIENT: ROGERS & CALLCOTT
SAMPLE ID:
TEST DATE: 6/14/2011

Treatment	CV%	MEAN	CV	STD. DEV.	VARIANCE
Control	29.963	17.9	0.29963	5.363377	28.76581
8	40.39	17.6	0.4039	7.10864	50.53276
17.4	20.638	17.7	0.20638	3.652926	13.34387
35	53.858	17.4	0.53858	9.371292	87.82111
50	41.870	14.8	0.4187	6.19676	38.39983
100	48.990	10.0	0.4899	4.899	24.0002

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date: 6/14/2011 Test ID: ROGERS&CAL Sample ID: XX9999999-NPDES Permit #
 End Date: 6/19/2011 Lab ID: SCLLC Sample Type: EFF1-POTW
 Sample Date: 6/14/2011 Protocol: EPAFW02-EPA/821/R-02-01; Test Species: CD-Ceriodaphnia dubia
 Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17.4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
35	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Transform: Arcsin Square Root

Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	0	10
8	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	0	10
17.4	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	0	10
35	0.8000	0.8000	0.9425	0.5236	1.0472	23.424	10	2	10
50	0.9000	0.9000	0.9948	0.5236	1.0472	16.644	10	1	10
100	0.9000	0.9000	0.9948	0.5236	1.0472	16.644	10	1	10

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test Indicates non-normal distribution (p <= 0.01)	3.3998	1.035	-3.0419	8.96677
Equality of variance cannot be confirmed				

48 HOUR LC50 = >100%

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date: 6/14/2011 Test ID: ROGERS&CAL Sample ID: XX9999999-NPDES Permit #
 End Date: 6/19/2011 Lab ID: SCLLC Sample Type: EFF1-POTW
 Sample Date: 6/14/2011 Protocol: EPAFW02-EPA/821/R-02-01; Test Species: CD-Ceriodaphnia dubia
 Comments:

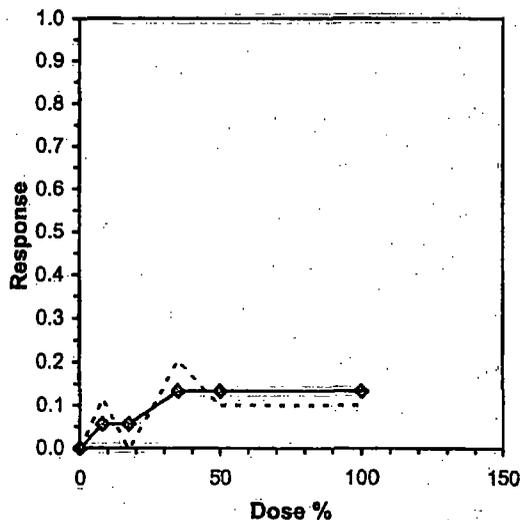
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17.4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
35	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Transform: Arcsin Square Root							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	1.0000	1.0000
8	0.8889	0.8889	0.9890	0.5236	1.0472	17.647	9	0.9444	0.9444
17.4	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	0.9444	0.9444
35	0.8000	0.8000	0.9425	0.5236	1.0472	23.424	10	0.8667	0.8667
50	0.9000	0.9000	0.9948	0.5236	1.0472	16.644	10	0.8667	0.8667
100	0.9000	0.9000	0.9948	0.5236	1.0472	16.644	10	0.8667	0.8667

Auxillary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	3.23143	1.035	-2.7436	6.52996
Equality of variance cannot be confirmed				

Point	Linear Interpolation (200 Resamples)			
	%	SD	95% CL	Skew
IC05*	7.200			
IC10	27.457			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

* Indicates IC estimate less than the lowest concentration.



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 5/20/2011 Test ID: 16CCDRT Sample ID: REF-Ref Toxicant
 End Date: 5/26/2011 Lab ID: SCLLC Sample Type: REF TOX
 Sample Date: Protocol: EPAFW02-EPA/821/R-02-01; Test Species: CD-Ceriodaphnia dubia
 Comments:

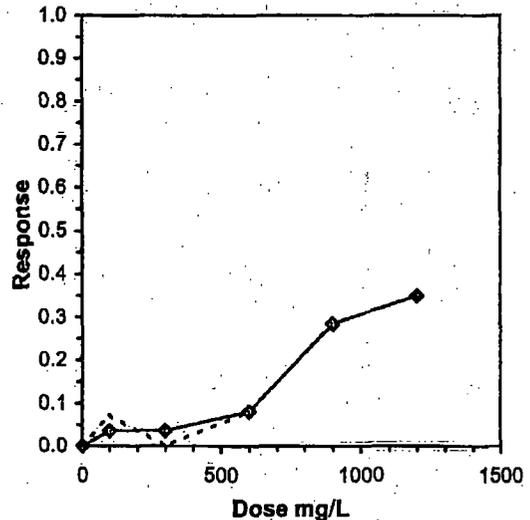
Conc-mg/L	1	2	3	4	5	6	7	8	9	10
D-Control	29.000	34.000	31.000	34.000	32.000	28.000	26.000	24.000	26.000	25.000
100	22.000	30.000	32.000	28.000	22.000	26.000	25.000	26.000	26.000	31.000
300	22.000	32.000	28.000	32.000	31.000	32.000	21.000	29.000	31.000	31.000
600	29.000	27.000	27.000	31.000	22.000	22.000	25.000	24.000	26.000	33.000
900	19.000	26.000	5.000	24.000	17.000	27.000	24.000	23.000	19.000	23.000
1200	20.000	21.000	17.000	5.000	20.000	20.000	18.000	18.000	25.000	24.000

Conc-mg/L	Transform: Untransformed							1-Tailed			Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	28.900	1.0000	28.900	24.000	34.000	12.787	10				28.900	1.0000
100	26.800	0.9273	26.800	22.000	32.000	12.902	10	1.023	2.287	4.693	27.850	0.9637
300	28.900	1.0000	28.900	21.000	32.000	14.262	10	0.000	2.287	4.693	27.850	0.9637
600	26.600	0.9204	26.600	22.000	33.000	13.636	10	1.121	2.287	4.693	26.600	0.9204
*900	20.700	0.7163	20.700	5.000	27.000	30.811	10	3.995	2.287	4.693	20.700	0.7163
*1200	18.800	0.6505	18.800	5.000	25.000	29.113	10	4.921	2.287	4.693	18.800	0.6505

Auxiliary Tests				Statistic	Critical	Skew	Kurt				
Kolmogorov D Test indicates normal distribution ($p > 0.01$)				0.84413	1.035	-1.2712	2.71238				
Bartlett's Test indicates equal variances ($p = 0.32$)				5.82753	15.0863						
Hypothesis Test (1-tail, 0.05)		NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test		600	900	734.847		4.6935	0.1624	186.137	21.0648	3.6E-06	5, 54
Treatments vs D-Control											

Linear Interpolation (200 Resamples)					
Point	mg/L	SD	95% CL	Skew	
IC05	394.80	227.73	39.38	651.85	0.0881
IC10	630.00	174.67	78.75	733.04	-1.4873
IC15	703.47	99.21	432.60	823.32	-2.4310
IC20	776.95	82.45	640.37	952.74	0.1950
IC25	850.42				
IC40	>1200				
IC50	>1200				

REFERENCE TOXICANT IS IN RANGE @ 850.42 MG/L
 UPPER LIMIT = 955.26 MG/L
 LOWER LIMIT = 0 MG/L





ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29608
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name Rogers & Callcott

Address See above

Report To: Anne Norris

Telephone No. See Above FAX No. SEE ABOVE

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS Acute and Chronic Toxicity	N	Filtered (Yes/No)	
		Y	Cooled (Yes/No)	
		P	Container Type (P/G)	
		eg	Container Volume	
		C	Sample Type (Grab/Composite)	
		WW	Sample Source (WW, GW, DW, Other)	
		NA	Sample Source Chlorinated (Yes/No)	
			Lab Receipt Cl Check	
			Lab Receipt pH Check	
			Preserved (Code)	
		A - None B - HNO ₃ C - H ₂ SO ₄	D - NaOH E - HCL F - Na ₂ S ₂ O ₅	G - Boric Acid H - Ascorbic Acid I - _____
		COMMENTS:		
		* Dilutions based on email from Anne Norris		
		SUBCONTRACTED TO SHEALY CONSULTANTS		
		A736 TRC=0.01		

Rogers & Callcott Lab No.	Yr./Date	Time	Sample Description
AD 02404	6-14	0915	WWTP Effluent

SAMPLER Relinquished by (Sig.) ① <i>[Signature]</i>	Date/Time 6/14/11 1150	Received by (Sig.) ② <i>[Signature]</i>	Date/Time 6-14-11 1150	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) ③ <i>[Signature]</i>	Date/Time 6-14-11 1219	Received by (Sig.) ④ <i>[Signature]</i>	Date/Time 6-14-11 1219	
Relinquished by (Sig.) ⑤ <i>[Signature]</i>	Date/Time 6/14/11 1428	Received by (Sig.) ⑥ <i>[Signature]</i>	Date/Time 6/14/11 1428	
Seal # _____ at'chd by ○ Recvd. Intact by ○ Seal # _____ at'chd by ○ Recvd. Intact by ○				Temperature of blank or representative sample At time of collection _____ °C At time of lab receipt <u>5.2</u> °C



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Phone (864) 232-1536 Fax (864) 232-6140
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Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name ROGERS + CALLCOTT

Address SEE ABOVE

Report To: ANNE NORRIS

Telephone No. SEE ABOVE FAX No. SEE ABOVE

PO No. _____ Project No. _____

Total Number of Containers	PARAMETERS CHRONIC TOXICITY	N							Filtered (Yes/No)
		Y							Cooled (Yes/No)
		W							Container Type (P/G)
		GW							Container Volume
		C							Sample Type (Grab/Composite)
		WW							Sample Source (WW, GW, DW, Other)
		N							Sample Source Chlorinated (Yes/No)
									Lab Receipt Cl, Check
									Lab Receipt pH Check
									Preserved (Code)

A-None	D-NaOH	G-Boric Acid
B-HNO ₃	E-HCl	H-Ascorbic Acid
C-H ₂ SO ₄	F-NO ₂ , S ₂ O ₈	I- _____

COMMENTS:

A743 TRC=0.01

SUB TO SHEALY CONSULTANTS

SECOND SAMPLE FOR CHRONIC TOX

SC Rec-temp = 2.1°C

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time	Received by: KNOWN HAZARDS ASSOCIATED WITH SAMPLES
① <u>Randy Ward</u>	<u>6/15/11 1155</u>	② <u>[Signature]</u>	<u>6.15.11 1155</u>	<u>Received from [Signature] Lab 6/16/11 1040</u>
③ <u>[Signature]</u>	<u>6.15.11 1409</u>	④ <u>[Signature]</u>	<u>6/15/11 1409</u>	<u>Received by [Signature] Lab 6/16/11 1040</u>
⑤ <u>[Signature]</u>	<u>6/15/11 1645</u>	⑥ <u>S/S1 Coker / Seem Aron</u>	<u>6/15/11 1645</u>	<u>Received by [Signature] Lab 6/16/11 1040</u>

Rogers & Callcott Lab No.	Yr/Date	Time	Sample Description
AD 02549	6/15	0935	WATER TREATMENT PLANT EFF. DISCH.

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time	Received by: KNOWN HAZARDS ASSOCIATED WITH SAMPLES
① <u>Randy Ward</u>	<u>6/15/11 1155</u>	② <u>[Signature]</u>	<u>6.15.11 1155</u>	<u>Received from [Signature] Lab 6/16/11 1040</u>
③ <u>[Signature]</u>	<u>6.15.11 1409</u>	④ <u>[Signature]</u>	<u>6/15/11 1409</u>	<u>Received by [Signature] Lab 6/16/11 1040</u>
⑤ <u>[Signature]</u>	<u>6/15/11 1645</u>	⑥ <u>S/S1 Coker / Seem Aron</u>	<u>6/15/11 1645</u>	<u>Received by [Signature] Lab 6/16/11 1040</u>

Page 9 of 10
 Seal # _____ at'chd by _____ Recvd. Intact by _____ Seal # _____ at'chd by _____ Recvd. Intact by _____
 Form Revised July 2008
 Ret. by S/S1 Coker / Seem Aron
 RetC Temp @ Rec 2.5°C R/C COC FORM



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Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name ROGERS & CALLCOTT
Address SEE ABOVE
Report To: ANNE NORRIS
Telephone No. SEE ABOVE FAX No. SEE ABOVE
PO No. _____ Project No. _____

Total Number of Containers	N							Filtered (Yes/No)
	Y							Cooled (Yes/No)
	P							Container Type (P/G)
	1 Gal							Container Volume
	C							Sample Type (Grab/Composite)
	WW							Sample Source (WW, GW, DW, Other)
	N							Sample Source Chlorinated (Yes/No)
								Lab Receipt Cl ₂ Check
								Lab Receipt pH Check
								Preserved (Code)

A-None D-NaOH G-Boric Acid
B-HNO₃ E-HCL H-Ascorbic Acid
C-H₂SO₄ F-NO₂S₂O₈ I- _____

COMMENTS:

AD 02774 6/17 0930 WWT TREATMENT PLANT
EFF. DISCH.
1 1
CHLORINE TOXICITY
SUB TO SHEELY CONSULTANTS
THIRD SAMPLE FOR CHRONIC TOX
A756
TRC = 0.02

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time 6/17/11 1150	Received by (Sig.) ② <u>[Signature]</u>	R/C Shipper's Date/Time 6-17-11 1150	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
R/C Shipper's Relinquished by (Sig.) ③ <u>[Signature]</u>	Date/Time 6/17/11 1300	Received by (Sig.) ④ <u>[Signature]</u>	Date/Time 6-17-11 1700	
Relinquished by (Sig.) ⑤ <u>[Signature]</u>	Date/Time 6-17-11 1610	Received by (Sig.) ⑥ <u>[Signature]</u>	Date/Time 6/17/11 1600	
Temperature of blank or representative sample				
At time of collection <u>3.7</u> °C				
At time of lab receipt <u>2.9</u> °C				

Seal # _____ at'chd by _____ Recvd. Intact by _____ Seal # _____ at'chd by _____ Recvd. Intact by _____
Form Revised July 2008 6/18/11 0700 20202/6/18/11 0915 Seal 10.



Attachment 3

July Monthly Construction Photo Log



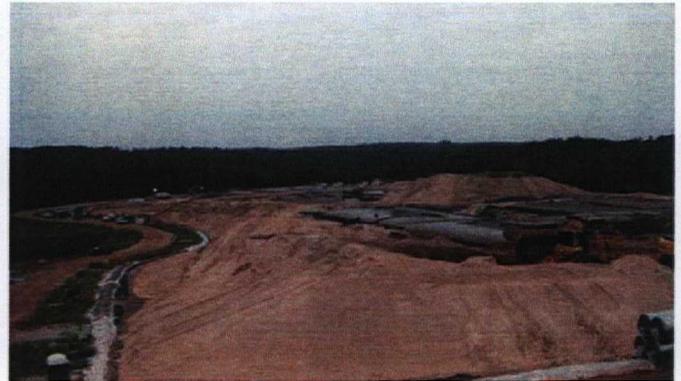
Shoal road used to transport sediment to SMU.



Mechanical and hydraulic dredging in WSII, looking upstream.



Mechanical dredging in WSII, looking upstream.



SMU area.



Demobilization of Kami Dredge.



Demolition of WSII.